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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,318	03/28/2001	Ravi Prakash	CHA9 2001 0003US1	4786

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EXAMINER	
AMINI, JAVID A	

ART UNIT	PAPER NUMBER
2672	

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/816,318	PRAKASH ET AL.	
	Examiner	Art Unit	
	Javid A. Amini	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Response to Arguments

Applicant's arguments filed 1/06/2005 have been fully considered but they are not persuasive.

Applicant on pages 8-9 responses partially to the two questions under the rejection 35 U.S.C. 112 second paragraph.

Examiner's reply: The two questions are: (How does a person skill in the art calculate the value of skew angle in order to find the value of K_h and K_v? Are K_h and K_v considered as coefficients for the skew angle and the data points?). The response is on page 9 first paragraph of remarks does not show the computation of a skew angle, and Applicant does not specify the K_h and K_v are considered as coefficients for the skew angle. The rejection 35 U.S.C. 112 second paragraph is still maintained.

Applicant on page 9 under section "B" argues that the reference Bhandarkar teaches the calculations must be performed in order to perform the image rotation. The Applicant's argument emphasizes that the second reference Chien teaches, " ... replacing traditional calculation of rotation operations with simple matching of block patterns and drawing of their PMPs." Applicant concluded that the calculations of Bhandarkar are incompatible with the teaching of Chien.

Examiner's reply: It seems like Applicant comparing the first stage of Bhandarkars' calculations to the second stage of Chiens' work. Bhandarkars' calculations for the basic 2-D image rotation operation described using equations (1) on page 1015 that is similar to the calculations of Chiens' work performed using equations (1) on page 484. Examiner concludes that the

Bhandarkars' work is very compatible with the teaching of Chiens' work (i.e. the general method).

Applicant on page 10, lines 6-10 argues the reference Bhandarkar fails to teach or suggest free of aliasing error.

Examiner's reply: (interpretation: the following term "aliasing" means the static distortion in digital signal caused by a low sampling rate). It is obvious that the higher sampling rate may provide free of aliasing error, see page 1015 in the second col. under section (1.1). The design of the ASIC controller also has the advantage of being able to provide better (i.e. distortion-free) output and performance, see page 1017 under section (2.3).

Applicant on page 10, lines 12-16 argues the addresses in Bhandarkar are generated by adding a sin or cosine to a value and not by using weighted sums of data points.

Examiner's reply: According to the claim language, Bhandarkar on page 1016 in first col. at second paragraph corresponding to Fig. 2 teaches adjusting a reflect value or proportion (weighted sum) of the sum is used.

Applicant on the same page lines 20-21 argues the address generation in Bhandarkar is not equivalent to the creation of a rotated image as included in the claimed invention.

Examiner's reply: Examiner would like to know how does Applicant compare the address generation with the creation of a rotated image? A copy of claim invention is provided to compare with the Applicant's argument above: *A method of rotating a first image in an image buffer, the method comprising the steps of: extracting first image from the image buffer; and creating a rotated image that is substantially free of aliasing error using weighted sums of data*

points of the first image, wherein weighting depends on a skew angle of the first image and data point location in the first image. Bhandarkar in fig. 1 illustrates a rotated image, and on page 1016 section 2.1 "PLA design" specified explicitly the values of fig. 1 are stored in a PLA. Chien in fig. 4 illustrates clearly the rotation of an image corresponding to their buffer's addresses.

Applicant on page 11 lines 5-13 argues that a method of rotating a first image in an image buffer is not obvious to one skilled in the art, neither Chien nor Bhandarkar disclose rotating and image in an image buffer.

Examiner's reply: Bhandarkar on page 1016 section (2.1. PLA design) teaches the Applicant arguments. Examiner strongly agrees that is obvious to one skilled in the art. Examiner encourages Applicant to schedule an interview for further and detail analysis.

Applicant on page 12 first paragraph argues that its weighting depends on a skew angle of the first image.

Examiner's reply: Chien in fig. 5 illustrates clearly the claim language. Chien in equation (1) shows the dependency of weighted sum of the data points to the skew angle.

Applicant on page 12, second paragraph and on page 13 argues that since the Office admits that Chien does not explicitly specify the algorithm as in the claim invention (claims 4, 16, 24 and 27), therefore, the Office should be withdrawn the rejection.

Examiner's reply: Examiner agrees with the following statement: Chien does not explicitly specify the algorithm in claims 4, 16, 24 and 27, however Chien on page 484 equation 1 represent the original image data by (x, y), and the rotated image data by (x', y'), the skew angle

data shown by (cosθ, sinθ, ...) . Chien on page 484 in fig. 5 illustrates the 30° rotation, that means the angle is equal 30° . Different values for θ could be chosen. For example: 30°, 45°, ... 360°. In another words 45° is equivalent of $1/8^{th}$ of 360°. The rotation can be implemented in $1/8^{th}$ increments. The following questions are repeated from pervious Office action that Applicant did not respond explicitly:

1- Applicant should specify the significant of the mentioned algorithms, but does not explicitly specify how does Applicant rotate an image without using an angle?

2- Are the data points V1, V2, V3 and V4 involved angles?

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4-9, 16-22 and 24-27 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant discloses in claim 4 line 5, K_h and K_v are fractions that are functions of skew angle and data point location of the first image. Applicant discloses the same statement on page 9 lines 12-15.

Examiner's questions:

a. How does a person skill in the art calculate the value of skew angle in order to find the value of K_h and K_v?

b. Are K_h and K_v considered as coefficients for the skew angle and the data points?

c. Does the first image rotate to the right and left in step of $1/8^{th}$ within the range of $\pm 90^{\circ}$ or the range of 360°?

d. Dose the first image rotate in step smaller than $1/8^{th}$ within a smaller range at a time?

e. How does Applicant estimate the skew angle?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Sung-II Chien (hereinafter refers as a Chien), and further in view of Suchendra M. Bhandarkar (hereinafter refers as a Suchendra).

1. Claims 1, 10.

Chien on page 488 under "*C. Discussions about Alternative Block Sizes*" teaches a computer and memory, and the step of preamble "A method of rotating a first image in an image buffer, the method comprising the steps of:" is obvious because each computer equipped with a graphic controllers and they designed with the image buffer or memory buffer. The step of "extracting first image data from the image buffer;" or initial image data from the image buffer is obvious because the images should be stored temporally or permanently in the memory or buffer areas. Chien in figs. 5, 6 and 9 illustrates the step of "creating a rotated image". Chien is silence about the step of "substantially free of aliasing error using weighted sums of data points of the first

image". However, Suchendra on page 1017 under section 2.3 teaches the rotated image is free of distortions and artifacts (or aliasing), by eliminating the need for floating point multiplication. Chien on page 484 in equation 1 represents data point in the original and the destination images. The skew angle of the first image shown by θ. Therefore the following step is obvious, because a person skill in the art would have used the same terminology as the following step: "wherein weighting depends on a skew angle of the first image and data point location in the first image. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Suchendra into Chien in order to modify the Chien's invention by eliminating the floating point multiplication method, which provide VLSI implementation of real-time image rotation. The same time Suchendra's invention could have implemented the algorithm uses coarse and fine blocks hierarchically organized and their PMPs.

2. Claim 2,

Chien on page 486 under "*C. Coarse Block Rotation*" teaches the step of "The method of claim 1, wherein the first image is of a document, and the first image data is created in the image buffer by the step of scanning the document".

3. Claim 3,

The method of claim 1, further comprising the step of storing the first image data in a database. The computer in the claim 1 can be considered as a database.

4. Claims 4-6,

The method of claim 1, wherein the step of creating the rotated image is provided by applying the following algorithm to the first image data:

Vo = Kh * Kv (V1 + V4 - V2 - V3) + Kh (V3-V4) + lQv (V2- V4) + V4, wherein Vo is a data point of the rotated image; V1, V2, V3 and V4 are first image data points that each incorporate a portion of Vo; and Kh and Kv are fractions that are functions of skew angle and data point location of the first image. Chien does not explicitly specify the above algorithm, however on page 484 equation 1 represent the original image data by (x, y), and the rotated image data by (x', y'), the skew angle data shown by (cosθ, sinθ, ...) . Chien on page 484 in fig. 5 illustrates the 30° rotation, that means the angle is equal 30° . Different values for θ could be chosen. For example: 30°, 45°, ... 360°. In another words 45° is equivalent of $1/8^{th}$ of 360°. The rotation can be implemented in $1/8^{th}$ increments. Applicant should specify the significant of the mentioned algorithms.

5. Claim 7.

See rejection of claim 4. For the step of "The method of claim 1, wherein the step of creating the rotated image is provided by applying the following algorithm to the first image data: wherein Vo is a data point of the rotated image; V2, V3 and V4 are data points of the first image that each incorporate a portion of Vo; and Kk and K. are fractions that are functions of skew angle and data point location of the first image.

6. Claim 8.

See rejection of claims 4-6. For the step of "The method of claim 7, wherein Kk and lQv are implemented in 1/8th increments".

7. Claim 9.

See rejection of claims 4-6. The method of claim 7, further comprising the step of providing Kh and Kv in at least one lookup table.

8. Claim 11.

The system of claim 10, wherein the data points of the initial image are in adjacent rows of the image buffer. Chien in fig. 3 illustrates the adjacent rows and columns.

9. Claim 12.

The system of claim 11, wherein a pair of data points are used from each of the adjacent rows of the image buffer. The step is obvious because Chien in equation 1 illustrates the data points by (x, y, x' and y').

10. Claim 13.

The system of claim 10, further comprising an image generation module configured to create the initial image. Chien in fig. 4 illustrates the rotation of an image that is the same as an initial image.

11. Claim 14.

The system of claim 13, further comprising a scanner for supplying data to the image generation module. See rejection of claim 2.

12. Claim 15.

The system of claim 10, further comprising a database configured to store initial image data. See rejection of claim 3.

13. Claim 16.

See rejection of claim 4.

14. Claim 17.

See rejection of claim 5. The system of claim 16, wherein K: and & are implemented in 1/8th increments.

15. Claim 18.

The system of claim 16, wherein Kh and Kv are provided in a lookup table. See rejection of claims 4-6.

16. Claim 19.

See rejection of claim 4.

17. Claims 20 and 21.

See rejection of claims 5 and 6.

18. Claim 22.

The step of "A workstation comprising the system for rotating an initial image stored in an image buffer of claim 10" is obvious because a person skill in the art could have installed the computer mentioned on page 488 in first col. lines 17-20 in Chien into the network with a server. Then the computer refers as the workstation. Otherwise the applicant should be willing to specify the significant of the term used as "a workstation".

19. Claims 23-27.

The content of claims 23-27 are similar to content of claims 1-9, therefore the rejection of claims 1-9 applies to claims 23-27.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

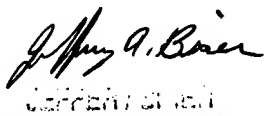
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Javid A. Amini whose telephone number is 571-272-7654. The examiner can normally be reached on 8-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on 571-272-7664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



PRIMARY EXAMINER

Javid A Amini
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